

NERL/ESD Publications

Technical Information Manager: Chris Sibert (702) 798-2234

Jan 1, 2000 - Dec 31, 2000

Presented Published

ABSTRACT/ORAL

Schumacher, B.A., Synder, K.E., Minnich, M.M., and Al-Khafaji, K. Movement of Trichloroethylene in Caliche. Presented at: Annual Soil Science Society of America Meeting, Minneapolis, MN, November 5-9, 2000. 11/5/2000

Contact: Susan L. Jackson

Abstract:

Koglin, E.N., Jenkins, R.A., Dindal, A.B., Bayne, C.K., Einfeld, W., and Crumbling, D. Performance verification of field analytical technologies that can assist in site characterization and monitoring activities. Presented at: ConSoil 2000, Leipzig, Germany, September 18-22, 2000. 9/18/2000

Contact: Eric N. Koglin

Abstract:

Mazzella, A.T. Electrical resistivity variations associated with controlled gasoline spills. Presented at: Society of Exploration Geophysicist/Calgary 2000 International Exposition and 70th Annual Meeting, Calgary, Canada, August 6-11, 2000. 8/6/2000

Contact: Aldo Mazzella

Abstract:

Daughton, C.G. Pollution from personal actions, activities, and behaviors: Pharmaceuticals and personal care products in the environment. Presented at: Overview presentation for "Drugs in the Environment" at the 21st Annual Meeting of the American College of Toxicology (ACT), San Diego, CA, November 14, 2000. 11/14/2000

Contact: Christian G. Daughton

Abstract: Perhaps more so than with any other class of pollutants, the occurrence of pharmaceuticals and personal care products (PPCPs) in the environment highlights the immediate, intimate, and inseparable connection between the personal activities of individual citizens and their environment. PPCPs, in contrast to other types of pollutants, owe their origins in the environment directly to their worldwide, universal, frequent, highly dispersed, and individually small but cumulative usage by multitudes of individuals - as opposed to the larger, highly delineated, and more controllable industrial manufacturing/usage of most high-volume synthetic chemicals. Many PPCPs (as well as their metabolites and transformation products) can enter the environment following ingestion or application by the user or administration to domestic animals. Disposal of unused/expired PPCPs in landfills and in domestic sewage is another route to the environment. The aquatic environment serves as the major, ultimate receptacle for these chemicals, for which little is known with respect to actual or potential adverse effects. Domestic sewage treatment plants are not designed to remove PPCPs, and the efficiencies with which they are removed vary from nearly complete to ineffective. While PPCPs in the environment (or domestic drinking water) are not regulated, and even though their concentrations are extremely low (ng/L-@Lg/L), the consequences of exposure to multiple compounds having different as well as similar modes of action over multiple generations prompts a plethora of questions. While the environmental issues involved with antibiotics and sex steroids are the most widely recognized, numerous other therapeutic and consumer-use classes of PPCPs pose environmental concerns. U.S. EPA and U.S. FDA are beginning to consider the many scientific issues involved with this multifaceted environmental concern. One of the most frequent questions is "So What? With therapeutic drugs, exposures of aquatic organisms are at levels far below therapeutic dosages for humans - and exposures for humans via drinking water are lower yet. So why should we be concerned even if PPCPs prove to be ubiquitous pollutants?" This question will be examined from a number of perspectives and suggestions will be offered with respect to actions regarding future direction for research and pollution prevention.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Zhao, X., Grange, A.H., and Sovocool, G.W. Mass determination of intact α -chain hemoglobin adducts to within 0.2 Da using mass peak profiling from selected ion recording data (MPPSIRD) with electrospray ionization. Presented at: 48th conference on mass spectrometry and allied topics, ASMS annual meeting, Long Beach, CA, June 11-15, 2000.

6/11/2000

Contact: Andrew H. Grange

Abstract:

Zhao, X., Grange, A.H., and Sovocool, G.W. Mass determination of intact α -chain hemoglobin adducts to within 0.2 using mass peak profiling from selected ion recording data (MPPSIRD) with electrospray ionization. Presented at: 48th conference on mass spectrometry and allied topics, ASMS annual meeting, Long Beach, CA, June 11-16, 2000.

6/11/2000

Contact: Andrew H. Grange

Abstract:

Grange, A.H., and Sovocool, G.W. Ion composition elucidation (ICE) for characterization and identification of organic compounds in environmental samples. Presented at: 21st SETAC Annual Meeting, Nashville, TN, November 12-16, 2000.

11/12/2000

Contact: Andrew H. Grange

Abstract:

Grange, A.H., and Sovocool, G.W. Ion composition elucidation (ICE) of ions from trace levels of pharmaceuticals and disinfection byproducts in water supplies. Presented at: 48th Conference on Mass Spectrometry and Allied Topics, ASMS annual meeting, Long Beach, CA, June 11-15, 2000.

6/11/2000

Contact: Andrew H. Grange

Abstract:

Grange, A.H., and Sovocool, G.W. Ion composition elucidation (ICE) of ions from trace levels of pharmaceuticals and disinfection byproducts in water supplies. Presented at: 48th conference on mass spectrometry and allied topics (ASMS) annual meeting, Long Beach, CA, June 11-15,

6/11/2000

Contact: Andrew H. Grange

Abstract:

Grange, A.H. A New High Resolution Mass Spectrometry technique for identifying pharmaceuticals and potential endocrine disruptors in drinking water sources. Presented at: ACS National Meeting, San Francisco, CA, March 25-29, 2000.

3/25/2000

Contact: Andrew H. Grange

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Grange, A.H. A new approach to high-resolution mass spectrometry for pollutant identification. Presented at: Web Announcement, Las Vegas, NV, August 10, 2000.

8/10/2000

Contact: Andrew H. Grange

Abstract: Problem. Matching of low-resolution mass spectra is the pre-eminent identification method for environmental pollutants listed in EPA methods. However, at least three factors limit the utility of mass spectral libraries for tentatively identifying compounds. - Mass spectra of poor quality due to low levels of analytes or coelution of interferences can yield e=t, multiple library matches. - The vast majority of organic compounds that provide gas chromatographic peaks are not found in mass spectral libraries. - Most organic compounds are ionic, too polar, too thermolabile, or too high in mass to traverse a gas chromatography column. Unidentified compounds require mass spectral interpretation to hypothesize possible compound identities. Standards must then be purchased or synthesized to confirm their identities by comparing their chromatographic retention times and mass spectra with those of unknowns. Ion Composition Elucidation. "ICE is Nice" is an instructional PowerPoint presentation that describes Ion Composition Elucidation (ICE). ICE is a powerful analytical technique that determines how many atoms of each element compose the molecular ion and fragment ions observed in a mass spectrum. This information can lead to identification of compounds that are not found in environmental mass spectral libraries. The "ICE is Nice" CD-ROM presents basic definitions, the scientific basis of ICE, and the advantages and limitations of ICE. The two components of ICE, data acquisition using Mass Peak Profiling-from Selected Ion Recording Data (MPPSIRD) and automated data interpretation by a Profile Generation Model (PGM), are applied to three analytical problems as illustrative case histories. For the non-specialist, information about mass spectrometry is accessible through <http://base-peak.wiley.com/>. Analytical- Approach. Determination of the compositions of the apparent molecular ion and fragment ions in a mass spectrum not found in mass spectral libraries greatly reduces the number of possible compound identities and reduces the number of standards that must be purchased. Between 5 and 10 mass-to-charge (m/z) ratios are monitored across full or partial mass peak profiles to provide ion chromatograms (MPPSIRD definition screen). The areas under the chromatographic peaks resulting from compounds eluting into the mass spectrometer are integrated and plotted to provide full or partial profiles. A weighted average of the top several points delineating a profile provide its "exact" mass, and the sums of the points used to plot profiles are ratioed to provide relative abundances. In addition to the profile of each ion that arises from the most abundant isotopes of the elements that compose the ion, the profiles heavier by 1 and 2 Da that arise from heavier isotopes such as ¹³C, ¹⁵N, O, and S are monitored (Isotopic abundances screen-). The three measured exact masses and two measured relative abundances are then entered into the Profile Generation Model to determine the unique elemental composition that provides similar calculated values.

Pyle, S.M., Jones, T.L., Hinnners, T.A., and Cizdziel, J.V. Evaluation and environmental application of gas chromatography with atomic emission detection (GC/AED). Presented at: Going on ECB website, Las Vegas, NV, July 29, 2000.

7/29/2000

Contact: Steven M. Pyle

Abstract: A hydrocarbon mixture of C12 to C17 n-alkanes was used to compare splitless injection versus on-column injection for gas chromatography with atomic emission detection (GC/AED). On-column injection was shown to give better and more consistent response than splitless injection resulting in potentially more accurate analyses. On-column injection was then used to evaluate a pesticide standard and shown, in general, to be able to predict molecular formulas and give adequate quantitation. Also, the feasibility of quantitation using non-authentic standards was demonstrated. Finally, the GC/AED was used to analyze two environmental samples (dimethyl mercury in fish and tetra-n-butyl tin in ground water) for which no authentic standards were available.

Pyle, S.M. Analysis of MTBE and BTEX by direct aqueous injection GC/MS. Presented at: Going on Environmental Chemistry Branch ESD Website, Las Vegas, NV, March 25, 2000.

3/25/2000

Contact: Steven M. Pyle

Abstract:

Grange, A.H., and Sovocool, G.W. Determination of elemental compositions of ions from trace levels of pharmaceuticals and disinfection byproducts in water supplies using mass peak profiling from selected ion recording data (MPPSIRD). Presented at: American Society for Mass Spectrometry, 48th Annual Meeting, Long Beach, CA, June 11-15, 2000.

6/11/2000

Contact: G. wayne Sovocool

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Zhao, X., Grange, A.H., and Sovocool, G.W. Determination of the mass of intact chain hemoglobin adducts to within 0.2 Da using mass peak profiling from selected ion recording data (MPPSIRD) with electrospray ionization. Presented at: American Society for Mass Spectrometry, 48th Annual Meeting, San Diego, CA, June 11-15, 2000.

6/11/2000

Contact: G. wayne Sovocool

Abstract:

Jones-Lepp, T., Varner, K.E., and Mitchell, A. Development and application of a solid phase extraction and micro-liquid chromatography-electrospray/ion trap mass spectrometry method for detecting three pharmaceuticals in natural waters. Presented at: National Ground Water Association Emerging Issues Conference, Minneapolis, MN, June 7-8, 2000.

6/7/2000

Contact: Tammy L. Jones-lepp

Abstract:

Daughton, C.G. Pharmaceuticals and personal care products in the environment: overarching issues and concerns. Presented at: National Ground Water Association Emerging Issues Conference Pharmaceuticals Session, Minneapolis, MN, June 6-8, 2000.

6/7/2000

Contact: Christian G. Daughton

Abstract:

Varner, K.E., Jones, T.L., and Eskes, C. Development and application of a micro-liquid chromatography-electrospray/ion trap mass spectrometry method for the detection of two suspected endocrine disruptors: Dibutyltin and triphenyltin, in natural waters and fish tissue. Presented at: ACS National Meeting, San Francisco, CA, March 26-31, 2000.

3/26/2000

Contact: Katrina E. Varner

Abstract:

Jones-Lepp, T., and Varner, K.E. Micro-liquid chromatography-electrospray/ion trap mass spectrometry for detection of two suspected endocrine disruptors - dibutyltin and triphenyltin - in natural waters and fish tissue. Presented at: ACS Special Symposium "Issues in the Analysis of Environmental Endocrine Disruptors", San Francisco, CA, March 26-31, 2000.

3/31/2000

Contact: Tammy L. Jones-lepp

Abstract:

Daughton, C.G. Pharmaceuticals in the environment - overarching issues and concerns. Presented at: ACS National Meeting: Pharmaceuticals and Personal Care Products in the Environment, San Francisco, CA, March 26-31, 2000.

3/26/2000

Contact: Christian G. Daughton

Abstract:

Jones-Lepp, T., and Varner, K.E. Micro-liquid chromatography-electrospray/ion trap mass spectrometry for detection of two suspected endocrine disruptors - Dibutyltin and Triphenyltin - in natural waters and fish tissue. Presented at: 219th ACS National Meeting Spring 2000, San Francisco, CA, March 26-31, 2000.

3/26/2000

Contact: Tammy L. Jones-lepp

Abstract:

Heithmar, E.M., and Cizdziel, J.V. Measurement of mercury in solid environmental samples by ICPMS with on-line sample ashing and hg concentration using an automatic mercury analyzer (TM). Presented at: Winter Conference on Plasma Spectrochemistry, Ft. Lauderdale, FL, January 10-15, 2000.

1/10/2000

Contact: Edward M. Heithmar

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Heithmar, E.M., Rosal, C.G., Momplaisir, G.-M., and Cizdziel, J.V. Performance of the high-efficiency nebulizer (HEN) at reduced flow rates in an ICPMS system. Presented at: Winter Conference on Plasma Spectrochemistry, Ft. Lauderdale, FL, January 10-15, 2000.

1/10/2000

Contact: Edward M. Heithmar

Abstract:

Momplaisir, G.-M., Rosal, C.G., and Heithmar, E.M. National Parks Samples: Multi-element by inductively coupled plasma mass spectrometry. Presented at: 2000 Winter Conference on Plasma Spectrochemistry, Ft. Lauderdale, FL, January 10-15, 2000.

1/10/2000

Contact: Charlita G. Rosal

Abstract:

Mace, T.H., and Lyon, J.G. Advanced remote sensing monitoring of mine waste. Presented at: U.S. EPA Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: John G. Lyon

Abstract: Abstract: The OEI-EAD and NERL-ESD have been cooperating on development of monitoring technologies and research to better use remote sensor-derived information and to ultimately disseminate that information to users. This work has focused on NASA's airborne advanced remote sensor systems in the arid western US, and the utility of using space borne versions of the sensors to provide monitoring information of mine and extractive industry wastes. A new cooperative effort focused on perchlorate identification will also be

Brilis, G.M. An auditing framework to substantiate electronic recordkeeping practices. Presented at: 220th ACS National Meeting, Washington, DC, August 20-24, 2000.

8/20/2000

Contact: George michael Brilis

Abstract: Quality assurance audits of computer systems help to ensure that the end data meet the needs of the user. Increasingly complex systems require the stepwise procedures outlined below. The areas reviewed in this paper include both technical and evidentiary criteria. Increasingly, there has been a trend to use computers in data acquisition and transmission. Many existing audit programs do not address issues regarding integrity of computer-resident data. The U.S. EPA's Office of Information Resource Management (OIRM) addressed the issue of integrity of laboratory data through the development of Good Automated Laboratory Practices (GALP). In order to assist quality assurance professionals as well as others interested in conducting audits of computer systems, the authors have developed an audit approach based on requirements described in the GALP. The requirements of the GALP have been modified and amended to be applicable to automated onsite computer systems. The checklist serves two purposes. The first is an auditing aid. The second is as documentary evidence of awareness of computer related QA issues.

Brilis, G.M. The importance of spatial accuracy for chemical information management. Presented at: 220th ACS National Meeting, Washington, DC, August 20-24, 2000.

8/20/2000

Contact: George michael Brilis

Abstract: Information about chemicals can be critical to making timely decisions. The results of these decisions may not be realized for many years. In order to increase the value of chemical information and to create and utilize meaningful environmental models, the Environmental Protection Agency (EPA) developed and implemented a Locational Data Policy (LDP). The intent of this policy is to extend environmental analyses and allow chemical and other data to be integrated based upon location, thereby promoting the enhanced use of EPA's extensive data resources for cross-media environmental analyses and management decisions. EPA's new initiative, the Geographic Information Systems - Quality Assurance Team (GIS-QA), is committed to working with all organizations to ensure that spatially related tools, such as the LDP, are supported for use in gathering chemical data. An overview of the EPA GIS-QA Team and primary components of the Locational Data Policy will be presented. Internet sites will be provided for reference.

The

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Presented Published

Brilis, G.M. Geographic information systems in environmental enforcement. Presented at: Midwest Environmental Enforcement Association 51st Periodic Membership Training Conference, Itasca, IL, June 26-29, 2000.

6/26/2000

Contact: George michael Brilis

Abstract: GIS has become a common tool in environmental management and enforcement. Only in the last few years, however, has the technology come into use directly by litigators working on environmental cases. This presentation explores how GIS is being used in law firms to manage and support cases. In general, there is a progression in the sophistication of use. This ranges from building courtroom exhibits from pre-packaged data sets, to integrating and analyzing data sets of disparate origin, and finally to full-scale information-management. These applications require attorneys, paralegals and technical experts to be aware of data quality issues at different levels

Brilis, G.M. GIS: QA Concerns. Presented at: Midwest Environmental Enforcement Association 51st Periodic Membership training Conference, Itasca, IL, June 26-29, 2000.

6/26/2000

Contact: George michael Brilis

Abstract: Geographic Information Systems (GIS) are increasingly becoming an important tool in making Agency decisions. Quality Control and Quality Assurance is required to be integrated the planning, implementation and assessment of GIS databases. The presentations in this session will address some of efforts being by various programs and offices to improve the quality of GIS outputs and will also examine how the quality of GIS affects enforcement of environmental regulations.

Brilis, G.M. EPA GIS-QA Team. Presented at: Nineteenth Annual National Conference on Managing Quality Systems for Environmental Programs, Albuquerque, NM, April 3-6, 2000.

4/3/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M. QA evaluation of records management. Presented at: Nineteenth Annual National Conference on Managing Quality Systems for Environmental Programs, Albuquerque, NM, April 5, 2000.

4/5/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M., Wait, A.D., and Worthington, J. Quality science in the courtroom. Presented at: The 10th Annual West Coast Conference on Contaminated Soils and Water, San Diego, CA, March 20-23, 2000.

3/20/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M. The importance of spatial accuracy for environmental analyses. Presented at: 19th Annual National Conference on Managing Quality Systems for Environmental Programs, Albuquerque, NM, April 6, 2000.

4/6/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M. The importance of spatial accuracy for onsite analysis. Presented at: Eighth International Conference - On site Analysis, Lake Las Vegas, NV, January 26, 2000.

1/26/2000

Contact: George michael Brilis

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Whitford, W.G. Factors affecting establishment of creosotebush in desert grasslands and the effects of establishment on ecosystem properties. Presented at: 2000 New Mexico Society for Range Management Meeting, Albuquerque, NM, January 20-21, 2000.

1/20/2000

Contact: Walter G. Whitford

Abstract:

Brilis, G.M. Quality assurance evaluation of onsite computer systems. Presented at: Eight International Conference of Onsite Analysis, Field Analytical Chemistry...the Lab Comes to the Field, Lake Las Vegas, NV, January 23-26, 2000.

1/23/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M. The importance of spatial accuracy for onsite analyses. Presented at: The Eighth International Conference of Onsite Analysis, Field Analytical Chemistry...the Lab Comes to the Field, Lake Las Vegas, NV, January 23-26, 2000.

1/23/2000

Contact: George michael Brilis

Abstract:

Sickles, II, J.E., and Shadwick, D.S. Correction for the impacts of covariance between concentration and deposition velocity or CastNet HNO₃ deposition estimates. Presented at: Sixth International conference on Air-Surface exchange of gases and particles, Edinburgh, Scotland, UK, July 3-7, 2000.

7/3/2000

Contact: Joseph E. Sickles, ii

Abstract: The covariance between hourly concentration (C) and deposition velocity (V) for various atmospheric species may act to bias the deposition (D) computed from the product of the weekly average C and V. This is a potential problem for the CASTNet filter pack (FP) species, nitric acid (HNO₃). Using ozone (O₃) behavior as a surrogate for the FP species, correction factors (CF) are developed to estimate this bias. Weekly CF for O₃ depend on both site and season, and seasonal average weekly, C.F for O₃ at a given site may be as high as 1.25. The seasonal magnitude of these CF is generally largest in summer and is ordered > summer > fall > spring > winter. The CF is driven to a large extent by the diurnal correlation between C and V (i.e., both are generally higher during the day and lower at night). However, since the diurnal C profile at elevated sites is relatively constant, the resulting correlation between C and V is small, and the CF at montane sites is generally negligible. The sampling protocol using daytime integrated sampling for a week and nighttime integrated sampling for a week captures the diurnal correlation between C and V adequately may be used to aggregate relatively unbiased weekly D estimates. Day-night CF for O₃ are close to unity, and limited results suggest similar behavior for HNO₃. Using these limited FP results, the site- and seasonally-specific weekly CF for O₃ are refined to estimate the corresponding CF for HNO₃. Worst-case adjustments for HNO₃ as high as 30% are indicated for summer periods at a given site,

Jan 1, 2000 - Dec 31, 2000

Presented Published

Liames, J., Pilant, D., and Lunetta, R.S. Application of a "Virtual field reference database" to assess land-cover map accuracies. Presented at: ASPRS 2001 Annual Conference, St. Louis, MO, April 23-27, 2000.

4/23/2000

Contact: John S. Liames

Abstract: An accuracy assessment was performed for the Neuse River Basin, NC land-cover/use (LCLU) mapping results using a "Virtual Field Reference Database (VFRDB)". The VFRDB was developed using field measurement and digital imagery (camera) data collected at 1,409 sites over a period of two years (1998-99) and was designed to support detailed assessments of remote sensor derived LCLU products by providing a robust database characterizing representative cover types throughout the study area. To account for plot heterogeneity two independent interpreters assigned class labels to the VFRDB reference data set corresponding to a hierarchical classification system. Interpretations were based on the detailed field measurement and imagery (camera) data contained in the VFRDB. Correspondence between interpreters was analyzed at multiple classification levels. A high level of correspondence between interpreters was attributed to the high quality source of measurement and imagery data to guide class assignments. Disagreements, between interpreters were a result of landscape heterogeneity. Results demonstrate the importance of a reference that can be repetitively interpreted to provide reference data with known variability, to support the quantitative assessments of remote sensor derived LCLU products

Lunetta, R.S., Ediriwickrema, J., Garten, C.T., Green, R., Liames, J., Johnson, D., Lyon, J.G., McKerron, A., and Pilant, D. Landscape characterization & non-point source nitrogen modeling in support of TMDL development in the Neuse River Basin, NC. Presented at: US EPA Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: Ross S. Lunetta

Abstract: Pfiesteria-like toxic- blooms have been implicated as the causative agent responsible for numerous outbreaks of fish lesions and fish kills in the Mid-Atlantic and southeastern U.S. An increase in frequency, intensity, and severity of toxic blooms in recent years is thought to be a result of surface water nutrient enrichment, mediated by changing land-use practices. A goal of this research is to apply land-cover/use information to quantify the extent and distribution of terrestrial sources of nitrogen contributing to harmful algal blooms and possible Pfiesteria outbreaks. This is being accomplished by coupling high resolution land-cover data sets with GIS-based nutrient models that will be calibrated and validated using a stratified subset of Neuse River Basin (NRB) sub-watersheds. A high resolution land-cover/use data set has been developed using advanced satellite based remote sensor systems. These include use of the new SPOT 4 (XS) and Landsat 7 Enhanced Thematic Mapper Plus (ETM+) remote sensor systems to provide basin-wide land cover/use data at 0.4 ha. and 5.8 ha. minimum mapping units (MMU) or landscape patches. Also, use of the new IKONOS sub-meter stereo imagery was made for the characterization of riparian zone vegetation structure. NRB modeling includes the development and implementation of a nitrogen mass balance model to quantify patch specific potential nitrogen sources, coupled with a hydrologic model for routing nitrogen to water courses based on event driven precipitation.

Matheny, R.W., and Weat, D. Logistic regression techniques applied to pixelated land use change modeling. Presented at: Urban Regional Information Systems Annual Conference and Exposition, Orlando, FL, August 19 -23, 2000.

8/19/2000

Contact: Ronald W. Matheny

Abstract:

Sickles, II, J.E. Air quality, deposition velocity, and dry deposition in the Eastern United States. Presented at: Sixth International Conference on Air-Surface Exchange of Gases and Particles, Edinburgh, Scotland, July 3-7, 2000.

7/3/2000

Contact: Joseph E. Sickles, II

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

O'Neill, R.V., Smith, E.R., Ritters, K.H., Wickham, J.D., Jones, K.B., and Tran, N.L. Landscape indicators and assessment. Presented at: The 15th Annual Symposium, U.S. Chapter of the International Association for Landscape Ecology, Ft. Lauderdale, FL, April 15-19, 2000.

4/15/2000

Contact: Kimberley A. Johnson

Abstract:

Holland, D.M., and Fuentes, M. A bayesian approach to spatial prediction using the matern covariance function. Presented at: American Statistical Association Joint Statistical Meetings 2000 Special Topic Session - Spatial Prediction of Environmental Processes, Indianapolis, IN, August 13-17, 2000.

8/13/2000

Contact: David M. Holland

Abstract:

Reuter, R.J., Zanner, C. W., and Vepraskas, M.J. Effects of catastrophic flooding on hydric soils of Eastern North Carolina. Presented at: Annual North Carolina Water Resources Research Conference, Raleigh, NC, March 30, 2000.

3/30/2000

Contact: Ronald J. Reuter

Abstract:

Smith, J.H., Wade, T.G., Wickham, J.D., and Jones, K.B. Correlation of landscape characteristics with non-point source water pollution. Presented at: American Society of Photogrammetry and Remote Sensing, Washington, DC, May 24, 2000.

5/24/2000

Contact: Jonathan H. Smith

Abstract:

Lunetta, R.S., Iliades, J., Knight, J., Congalton, R.O., and Mace, T.H. An assessment of ground truth variability using a "virtual field reference database". Presented at: International Symposium on Spatial Accuracy Assessment in Natural Resources - Accuracy 2000, Amsterdam, The Netherlands, July 12-26, 2000.

7/12/2000

Contact: Ross S. Lunetta

Abstract:

Smith, J.H., Wickham, J.D., Yang, L., and Van Driel, N. National land-cover data. Presented at: The 15th Annual Symposium, U.S. Division of the International Association of Landscape Ecology, Ft. Lauderdale, FL, April 15-19, 2000.

4/15/2000

Contact: James D. Wickham

Abstract:

Wickham, J.D., Smith, E.R., O'Neill, R.V., Ritters, K.H., Wade, T.G., and Jones, K.B. Spatial pattern of future vulnerability of stream eutrophication in the Mid-Atlantic Region of the United States. Presented at: 15th Annual Symposium, U.S. Division of the International Association of Landscape Ecology, Ft. Lauderdale, FL, April 15-19, 2000.

4/15/2000

Contact: James D. Wickham

Abstract:

Smith, E.R., Ritters, K.H., and Wickham, J.D. Integrating human, physical, and biological data for landscape assessments. Presented at: The 15th Annual Symposium, U.S. Chapter of the International Association for Landscape Ecology, Ft. Lauderdale, FL, April 10-19, 2000. 2000.

4/10/2000

Contact: Kenneth B. Jones

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Matheny, R.W., and Hanisak, K.A. Abstracts for "Pixel-level land use change models: A comparative approach". Presented at: 37th Annual Conference of the Urban and Regional Systems Association, Orlando, FL, August 19-23, 2000.

8/19/2000

Contact: Ronald W. Matheny

Abstract:

Lyon, J.G., Moore, John, and Arberg, P.A. EMPACT: The Las Vegas Interagency Pilot Program. Presented at: U.S. EPA National Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: Phillips A. Arberg

Abstract: ENPACT: The Las Vegas Interagency Pilot Project John G. Lyon, John Moore and Philips Arberg, USEPA, ORD, National Exposure Research Laboratory, Environmental Sciences Division, 944 E. Harmon, Las Vegas, NV 89119. The Las Vegas Interagency Pilot Project of the EMPACT program has involved eleven efforts. These efforts are described in brief on the poster presentation. They include: Las Vegas Environmental Monitoring Inventory, the Quality of Life in Las Vegas, Livable Communities and Citizen Perceptions, Communication Plan for Environmental Monitoring for Public Access and Community Tracking, EMPACT-Las Vegas Website, Smart Growth Conference, Visibility Project, LTV Modeling, LTV Monitoring, LTV Risk Communication, and Long Term Vision for Environmental Monitoring in Las Vegas.

Jones, K.B., and Lyon, J.G. Landscape metrics for measurements and modeling over large areas. Presented at: US EPA Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: Kenneth B. Jones

Abstract:

Jones, K.B., Neale, A.C., and Lyon, J.G. Landscape ecology indicator monitoring methods development. Presented at: US EPA Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: Kenneth B. Jones

Abstract:

Slonecker, E.T., and Lyon, J.G. Remote sensing in detecting buried munitions from World War I. Presented at: US EPA Environmental Monitoring Technology Conference, Boston, MA, September 19-20, 2000.

9/19/2000

Contact: E. terrence Slonecker

Abstract: During World War I, The American University in Washington D.C. was used by the U.S. Army as an experiment station for the development and testing of a variety of battlefield munitions including chemical weapons such as Mustard Gas, Phosgene, Ricin and Lewisite, among others. After the end of the War in 1918, many of the weapons and chemical agents were haphazardly buried in and around the American University testing area which is now known as Spring Valley. In 1993, chemical-laden mortar shells were accidentally unearthed by a construction crew setting off a series of investigations that, to date, has cost over 40 million dollars and is still on-going. The Environmental Photographic Interpretation Center (EPIC) is supporting the on-going Superfund investigation efforts using remote sensing technology. Both conventional and research applications of remotely sensed imagery, along with GIS database developments, are playing a critical role in the discovery and removal of chemical weapons and contamination in this area. This presentation will document the EPIC's use of historical imagery, GIS, photogrammetry and hyperspectral remote sensing in locating and removing these weapons from the environment.

Pitchford, A.M., Rager, A.H., and van Remortel, R.D. Transforming NEXRAD precipitation files for GIS use in data assessment. Presented at: ESRI Conference, San Diego, CA, June 26-29, 2000.

6/26/2000

Contact: Ann M. Pitchford

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Ranasinghe, J.A., Russell, D.E., Kutz, F.W., Frithsen, J.B., Paul, J.F., Batiuk, R., Hyland, J.L., Scott, J., and Dauer, D.M. Comparison of two indices of Benthic community condition in Chesapeake Bay. Presented at: Environmetrics, Las Vegas, NV, September 18-20, 2000. 9/18/2000

Contact: Frederick W. Kutz

Abstract: The Chesapeake Benthic Index of Biotic Integrity (B-IBI) and the EMAP-VP Benthic Index were applied to samples from 239 sites in Chesapeake Bay. The B-IBI weights several community measures equally and uses a simple scoring system while the EMAP-VP Benthic Index uses discriminant function coefficients to weight variable contributions. The two indices agreed on degraded or undegraded classifications for benthos at 85% of these sites. The indices were strongly associated with Pearson and Spearman correlation coefficients of 0.78 and 0.76, respectively. The 35 sites where the indices disagreed were scattered in different habitats throughout the Bay, and were most often located between areas with predominantly degraded and predominantly undegraded sites. Many of the classification disagreements were at sites with index values close to, but on opposite sides of, the degraded-undegraded thresholds. We prefer using the B-IBI because there were indications that the EMAP-VP index did not detect some subtle degradation effects, the B-IBI incorporates information from more ecological categories, and the B-IBI is easily decomposed to identify community attributes contributing to degraded site classifications.

Jones, K.B. Historical Patterns of habitat changes and genetic divergence in the desert and Short Horned Lizards. Presented at: Annual Horne Lizard Conservation Society Symposium, Portal, AZ, October 20-21, 2000. 10/20/2000

Contact: Kenneth B. Jones

Abstract: Historical environmental change is thought to have played an important role in the diversification of the biota of western North America. Many patterns of diversification have been associated with glacial-interglacial cycles of the latest Pleistocene. To evaluate the relative influence of old and recent historical environmental change on lineage diversification, mitochondrial DNA of the short-horned lizard (*Phrynosoma douglasi*) and the desert homed lizard (*Phrynosoma platyrhinos*) were analyzed. Both species are widespread and have relatively old histories in western North America. The short-horned and desert homed lizards demonstrated multiple scales of lineage diversification representing responses to relatively old and recent historical environmental change. Deep levels of divergence in short-horned lizards were structured geographically among Kuchler Physiographic regions and were temporally concordant with the late Tertiary uplift of the western North American cordillera. The desert homed lizard demonstrated a deep divergence between the southern Sonoran Desert and the remainder of the species' range. The depth of lineage diversity in both lizards was concordant with a model of habitat change during the last glacial maximum. Regions that maintained large patches of suitable habitat during the last glacial maximum had deep levels of divergence whereas regions that lost large areas of suitable habitat had shallow levels of within-region divergence. The phylogeographic patterns of the two species, and results of simulated habitat change, do not support a model of mass habitat shift to the south in response to glaciation. Rather, results of this study suggest that suitable habitats and populations persisted in many areas within the current ranges of both species ranges during the last glacial maximum, although the distribution of the desert homed lizard was more limited.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Hall, R.K., Ellsworth, S., Husby, P., Rosamond, C., Powell, H., Lincoff, A., and Heggem, D.T. Distribution of sediment mercury concentrations in the Humboldt River Watershed. Presented at: Historic and current mining activities conference, San Francisco, CA, November 6-10, 2000.

11/6/2000

Contact: Daniel T. Heggem

Abstract: In 1998 the United States Environmental Protection Agency (USEPA) required the mining industry to list all releases to the environment exceeding the Toxic Release Inventory (TRI) reporting threshold. Mining activities in Arizona, California and Nevada accounted for approximately 66% (2.3 billion pounds) of the total releases nationally. Of the 57 facilities in these three states reporting toxic releases, 36 (63%) are in the State of Nevada, with 22 (38%) located in the Humboldt River watershed. Mercury releases occur from weathering of waste rock and mercury is one of the primary compounds released into the air from ore processing facilities. Mining facilities within the Humboldt reported releasing approximately 14,000 lbs of mercury into the atmosphere. Mercury was analyzed in water and stream sediment samples from 35 randomly selected sites as part of the USEPA Region IX Humboldt River Watershed Regional environmental Monitoring and Assessment Program (R-EMAP) project. Mercury in stream sediment was detected at 24 (68%) of the sites with concentrations ranging from 0.07 - 1.50 mg/kg. The Lowest Effects Level for aquatic organism for mercury of 0.2 mg/kg was exceeded at 6 (17%) sites located in tributaries to the Humboldt River west of Winnemucca, and the Carlin Trend area and in tributaries to the Mary, s River, Rock Creek and Reese River. Mercury in the water column was below the detection limit of 0.1 ug/L in all 35 samples. This study indicates mercury is wide spread throughout the watershed in low to moderate levels. The highest concentrations are associated with general geology and mining.

Tallent-Halsell, N.G., and Cross, C.L. Impacts of soil salization in a lower Colorado River impoundment Riparian Wetlands. Presented at: Annual Conference of the Society of Wetland Scientist, Quebec, Canada, August 6-12, 2000.

8/6/2000

Contact: Nita G. Tallent-halsell

Abstract:

Jones, K.B., Neale, A.C., Nash, M.S., van Remortel, R.D., Wickham, J.D., Riitters, K.H., and O'Neill, R.V. Analyzing the consequences of environmental spatial patterns on environmental resources: The use of landscape metrics generated from remote sensing data. Presented at: Geological Congress, Rio de Janeiro, Brazil, August 6-17, 2000.

8/6/2000

Contact: Kenneth B. Jones

Abstract: A number of existing and new remote sensing data provide images of areas ranging from small communities to continents. These images provide views on a wide range of physical features in the landscape, including vegetation, road infrastructure, urban areas, geology, soils, and water courses. Despite increases in the spatial and attribute resolution of images over the last few years, we have fallen behind on our ability to move these images beyond pretty pictures to robust environmental assessments. This paper presents a series of methods developed by the US Environmental -Protection Agency to analyze spatial patterns in the environment and the consequences of such patterns on the conditions of ecological resources, including forests, water, and biota (biological diversity). The methods apply fundamental principles from the fields of landscape ecology and ecological hierarchy theory, and take advantage of new remote sensing databases and advances in geographic information system (GIS) technology. We demonstrate the applications of these approaches relative to three scales: (1) an assessment of forest fragmentation at the global scale, (2) an assessment of water resources at a regional scale, and (3) an assessment of habitat resources (biological diversity) at a watershed or catchment scale.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Kepner, W.G., Watts, C.J., Edmonds, C., Maingi, J. K., and Marsh, S. E. Predicting changes using multi-date satellite imagery: San Pedro River case study. Presented at: Predicting hydrologic, geologic, and biologic responses to a drier and warmer climate in the desert southwest, Tucson, AZ, April 23-25, 2001. 4/23/2000

Contact: William G. Kepner

Abstract: . Vegetation change in the American West has been a subject of concern throughout the twentieth century. Although many of the changes have been recorded qualitatively through the use of comparative photography and historical reports, little quantitative information has been available on the regional or watershed scale. Additionally, little research effort has been dedicated to improving human understanding regarding changing conditions and trend relative to planning and management of common resources at regional landscape scales. During the past two decades, important advances in the integration of remote imagery, computer processing, and spatial analysis technologies have been used to better understand the distribution of natural communities and ecosystems, and the ecological processes that affect these patterns. These technologies provide the basis for developing landscape measurements that can be integrated within hydrologic and nonequilibrium models to determine long-term change and make predictive inferences about the future. This case study employs a system land cover maps generated from a multi-date satellite imagery database which incorporates Landsat Multi-Spectral Scanner (MSS) imagery from the early 1970s/mid 1980s, and early 1990s and Landsat Thematic Mapper (TM) imagery from 1997. It has been tested over the Upper San Pedro Watershed (U.S./Mexico) where results indicate that extensive, highly connected grassland and desertscrub areas are the most vulnerable ecosystems to fragmentation and actual loss due to encroachment of xerophytic mesquite woodland and urbanization. In the study period, grasslands and desertscrub not only decreased in extent but also became more fragmented. That is, the number of grassland and desertscrub patches increased and their average patch sizes decreased. In stark contrast, the mesquite woodland patches increased in size, number, and connectivity. These changes have important impact for the hydrology of the region, since the energy and water balance characteristics for these cover types are significantly different. This study has been used to determine ecosystem vulnerabilities through the use of change detection and indicator development, especially in regard to traditional degradation processes that have occurred throughout the western rangelands involving changes of vegetative cover and acceleration of water and wind erosion.

Slonecker, E.T., and Lyon, J.G. Spectral monitoring of fugitive contaminants in the environment. Presented at: US EPA Environmental monitoring technology conference, Boston, MA, September 19 -20, 2000. 9/19/2000

Contact: E. terrence Slonecker

Abstract: The accidental or intentional release of hazardous chemical substances into the environment is an inevitable consequence of anthropogenic activity. The detection, monitoring and remediation of fugitive contaminants is a major risk factor for human and ecological health and is regulated by several major environmental statutes such as the Clean Water Act, the Resource Conservation and Recovery Act and the Comprehensive Environmental Response Compensation and Liability Act, among others. Hazardous waste and related issues cost the Nation billions of dollars annually, and involves thousands of active and abandoned hazardous waste facilities. Monitoring the extent and distribution of contaminants in the soil, water and vegetation is most often accomplished by way of in situ sampling and time-consuming and costly laboratory analysis methods. However, recent advances in remote sensing science, using hyperspectral imaging technology, allow the collection of hundreds of very narrow bandwidth channels across the solar reflected spectrum and can be analyzed using standard spectroscopic analysis techniques. The result is that many substances can now be identified based on their unique spectral fingerprint in the solar reflected spectrum. However, outside the laboratory, pure substances are rare and most fugitive contaminants exist in a matrix of materials that includes vegetation coverage, which is often a dominant factor from a landscape or overhead remote sensing perspective. The ability to detect contaminants in the environment through changes in vegetation reflectance would be a major advance in environmental monitoring technology. This presentation will discuss past and future use of hyperspectral remote sensing and reflectance spectroscopy to identify hazardous materials in the environment through detection of changes in vegetation reflectance at known hazardous waste sites.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Williams, D.J. Inez, Kentucky coal slurry spill. Presented at: Federal Applications of satellite image information-3 TASC Westfields, Chantilly, VA, December 14, 2000.

12/14/2000

Contact: David J. Williams

Abstract: Abstract: On October 11th, 2000, a breach of a coal slurry impoundment released approximately 2 1 0 million gallons of coal slurry (a mixture of fine coal particles, silt, clay, sand and water) into the Big Andy Branch, Wolf Creek, and Coldwater Fork. Approximately 75 river miles were affected by flood conditions due to the release of the slurry and deposition of the-slurry solids in the streams and along the stream banks. Analysis of the disaster area was accomplished using aerial photography and National Technical Means (NTM) to document the flood extent and slurry deposition boundaries. This' project served as a pilot study for the use of NTM for EPA Emergency Response informational support.

Jennings, D.B., and Jarnagin, S.T. Impervious surfaces and streamflow discharge: A historical remote sensing perspective in a Northern Virginia sub-watershed. Presented at: American Society of Photogrammetry and Remote Sensing (ASPRS) 2000, Washington, DC, May 31, 2000.

5/31/2000

Contact: David B. Jennings

Abstract:

Cross, C.L. Movement patterns of the eastern cottonmouth in a natural and an anthropogenic marsh habitat in Southeastern Virginia. Presented at: 7th Annual Conference of the Wildlife Society, Nashville, TN, September 12, 2000.

9/12/2000

Contact: Chad L. Cross

Abstract:

Cross, C.L. Behavioral ecology of the eastern cottonmouth (*Agkistrodon P. Piscivorus*) in a natural and an anthropogenic marsh habitat in Southeastern Virginia. Presented at: 80th Annual Meeting of the American Society of Ichthyologists and Herpetologists, La Paz, B.C.S., Mexico, June 14, 2000. 2000.

6/14/2000

Contact: Chad L. Cross

Abstract:

Nash, M.S., and Whitford, W.G. Ants as biological indicators for monitoring changes in arid environments: Lessons for monitoring protected areas. Presented at: 1st International Symposium and Workshop on Arid Zone Environments: Research and Management Options for Protected Areas, Abu Dhabi, United Arab Emirates (UAE), January 23, 2000. 2000.

1/23/2000

Contact: Maliha S. Nash

Abstract: The responses of ant communities to structural change (removal of an invasive were studied in a replicated experiment in a Chihuahuan Desert grassland. The results from sampling of ant communities by pit-fall trapping were validated by mapping ant colonies on the experimental plots. Spatial and temporal responses of a dominant species were examined by kriging maps and analysis of variance. The 'IL,Merical and spatial responses of ants recorded from pit-fall trap data were the same as those recorded from mapping ant nests. The dominant liquid feeding species Change and environmental stress. The co-dominant seed-harvesting ant, *Pogonomyrmex desertorum* Wheeler abundance, exhibited a numerical response to ecosystem change but the nests did not change their spatial distribution. Species richness was also affected by ecosystem change.

Lopez, R.D., and Davis, C.B. Post-construction seedbank change (1985 - 1997) in a restored coastal freshwater marsh (Lake Erie, USA). Presented at: Society of Ecological Restoration International Conference, Liverpool, United Kingdom, September 4-7, 2000.

9/4/2000

Contact: Ricardo D. Lopez

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Williams, D.J. Determining the mineralogy of poorly crystalline mine drainage precipitates using hyperspectral data. Presented at: IEEE International Geoscience and Remote Sensing Symposium, Honolulu, HI, July 24-28, 2000.

7/24/2000

Contact: David J. Williams

Abstract:

Lopez, R.D., and Davis, C.B. Relationship between landscape fragmentation, structural plant guilds, and avian dispersal in wetland ecosystems. Presented at: International Association of Landscape Ecology, Ft. Lauderdale, FL, April 15 -19, 2000.

4/15/2000

Contact: Ricardo D. Lopez

Abstract:

Lopez, R.D., and Davis, C.B. Wetland change detection in an urban area: Implications for ecosystem assessment techniques in rapidly developing landscapes. Presented at: Society of Wetland Scientists - International Association of Ecology, Quebec City, Canada, August 6-12, 2000.

8/12/2000

Contact: Ricardo D. Lopez

Abstract:

Slonecker, E.T., and Williams, D.J. Spectral remote sensing of contaminated mine drainage. Presented at: ASPRS Annual Convention - DC 2000, Washington, DC, May 22-26, 2000.

5/22/2000

Contact: Donald Garofalo

Abstract:

Williams, D.J., and Norton, S.B. Determining impervious surfaces in satellite imagery using Digital Orthophotography. Presented at: American Society for Photogrammetry & Remote Sensing Annual Convention, Washington, DC, May 20, 2000.

5/20/2000

Contact: David J. Williams

Abstract:

Jarnagin, S.T., and Swan, B.K. Interactions between bythotrephes cederstroemi and leptodora kindtii inferred from seasonal population abundance patterns in Lake Michigamme, Michigan, USA. Presented at: American Society of Limnology and Oceanography (ASLO) 2001 Aquatic Sciences meeting, Albuquerque, NM, February 12-16, 2001.

2/12/2000

Contact: S. Taylor Jarnagin

Abstract:

Bythotrephes cederstroemi is a non-indigenous predaceous zooplankton invading North American freshwater lakes in the Great Lakes region. We present seasonal population abundance values for both Bythotrephes and Leptodora kindtii from Lake Michigamme, Michigan for the years 1995-1997. We illustrate that Leptodora appears to be inhibited by Bythotrephes. Leptodora populations declined to near zero when Bythotrephes mean whole-depth abundance exceeded 3-5 animals per m³ and late season Leptodora populations consisted only of nauplii. Our population data do not demonstrate the reason for the apparent inhibition of Leptodora by Bythotrephes. Bythotrephes may out-compete Leptodora for a shared food resource or may directly prey upon Leptodora. Our data emphasize the potential for the alteration of food webs due to the introduction of Bythotrephes into freshwater lake ecosystems. Both species rely on resting eggs to overwinter and reestablish populations. The elimination of early season Leptodora adult and juvenile instars and the failure of late season Leptodora nauplii to reach adulthood and produce resting eggs could result in the elimination of Leptodora from lakes where Bythotrephes has invaded.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Kepner, W.G., Baker, J.R., Chaloud, D.J., Kinney, W.L., Hamilton, M.E., and Jones, K.B.
Monitoring stream condition in the Western United States. Presented at: 32nd Annual Meeting of the Desert Fishes Council, Death Valley National Park, CA, November 16-19, 2000.

11/16/2000

Contact: Kimberley A. Johnson

Abstract: The U.S. Environmental Protection Agency Environmental Monitoring and Assessment Program (EMAP) is a national research program to develop the tools necessary to monitor and assess the status and trends of ecological resources. EMAP's goal is to develop the scientific understanding for translating environmental monitoring data from multiple spatial -and temporal scales into assessments of ecological condition and forecasts of the future risks to the sustainability of our natural resources. To accomplish its goals the ENIAP program has initiated a large regional aquatic study across the western United States (Arizona, California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming). EMAP will combine ecological indicators (fish, macroinvertebrate and periphyton assemblages; riparian and in-stream physical habitat; water chemistry) with a statistical sampling strategy over a five-year period to demonstrate the application of core monitoring and assessment tools. It is anticipated that information gathered from the EMAP Western Pilot Study program will assist environmental managers and decision-makers in understanding stream ecological function in relation to human influence. Additionally, we expect that EMAP monitoring data measured over time could be incorporated into large-scale trend assessments to determine the changing conditions of our nation's environment. This poster provides an overview of the sample design and indicator approach for stream sites sampled in Arizona, Nevada, and Utah.

Mace, T.H., Ellington, J.J., Evans, J.J., McCutcheon, S.C., Mace, Jason T., Slonecker, E.T., Williams, D.J., Lang, Harold, and Van den Bosch, Jeanette. Remote sensing of perchlorate effects on salt cedar preliminary results from the Las Vegas wash. Presented at: 2001 ASPRS Annual Conference, St. Louis, MO, April 23-27, 2001.

4/23/2000

Contact: E. terrence Slonecker

Abstract: Sodium Perchlorate and ammonium Perchlorate, major components of solid rocket fuel, have been manufactured in the Las Vegas Valley immediately up gradient from the Las Vegas Wash, since 1945 and 1956, respectively. Measurements of emerging ground water quality in the vicinity of the Wash have Perchlorate concentrations up to 1 00,000 ppb, and surface water in the Wash has concentrations of approximately 400 ppb. The potential discharge of Perchlorate into Lake Mead and the lower Colorado River system is an environmental concern. This study examines the feasibility of mapping Perchlorate effects in Salt Cedar (*Tamarix ramosissima*), an invasive tree species in riparian zones throughout the southwest, as an indicator of Perchlorate contamination. Our working hypothesis is that Salt Cedar accumulates Perchlorate from contaminated soils and shallow groundwater resulting in measurable physiological changes. Preliminary results using NASA MODIS/ASTER Simulator (MASTER) low altitude aircraft data acquired in October of 1999, low altitude AVIRIS aircraft data acquired in July of 2000, chemical analysis of soil, water, and fohar samples, and field and laboratory spectrometry are presented. These preliminary results are all consistent and indicate that Salt Cedar leaves and branches contain Perchlorate in the vicinity of shallow contaminated groundwater and soils, and that the spectral characteristics of severely affected trees differ from unaffected trees. This difference is particularly evident in a composite of Principal Components Transformation Bands 4, 5, and 6 from the 50-band MASTER overflight data which shows a unique spectral response in the vicinity of the documented Perchlorate plume.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Kutz, F.W., and Thornton, K.W. A strategy for integrated ecological restoration of riparian buffers in the mid-Atlantic region. Presented at: Annual meeting of the MD Water Monitoring Council, Linthicum, MD, December 1, 2000.

12/1/2000

Contact: Frederick W. Kutz

Abstract: Increased sediments, nutrients, and other contaminants in the Mid-Atlantic region contribute to environmental problems ranging from stream degradation to possibly *Pfiesteria* attacks in Chesapeake Bay. Restoring riparian areas - the filters between terrestrial watersheds and aquatic ecosystems - represents a cost-effective, environmentally sound approach for reducing these contaminants loads. This presentation describes a strategic approach to riparian buffer restoration. The goal of this strategy is to better understand from a holistic perspective how riparian areas function, particularly when placed at different locations in the watershed, build on existing restoration efforts, develop predictive tools and provide design guidance that can be used to implement watershed management and protection programs. The objectives of this initiative are to monitor, to understand, to predict and to manage riparian buffer restoration, including the myriad of scientific elements associated with this endeavor (illustrated at right). There are three interacting elements forming the foundation for this strategy: (1) Alliance Formation - It is our belief that no one Federal or State agency has all of the resources and expertise needed to accomplish the study, evaluation, and restoration of riparian buffers. Therefore, partnerships among interested Federal, State and Local agencies must be made. These partnerships should also include corporate and non- governmental organizations. (2) Research Framework-The strategy is built around the EPA Ecological Risk Assessment Framework to ensure ecological risks from various management activities occurring within the watershed and the Region can be estimated and incorporated in the decision making process. (3) Research Studies - Five research categories will contribute to riparian area restoration: Targeting/characterization research will identify specific, high priority sites for intensive research, nested within a greater number of sites to characterize conditions within watersheds throughout the Mid- Atlantic region. Landscape assessment approaches may argument more traditional targeting models. Riparian configuration research, integrating surface/subsurface hydrologic, physicochemical and biological processes, will determine the extent of the area, physical-chemical characteristics, and the species composition needed to reduce contaminant loads. Configuration monitoring, including ground-level and remotely-sensed monitoring data will initially establish the baseline conditions and subsequently document the performance of different riparian area configurations. Evaluation and predictive tools will. be developed both for diagnosing problems and for predicting possible future conditions under different watershed management activities. It is absolutely imperative that programs be established to insure that restoration activities are having the desired effects. Management guidance will be provided to design the riparian area, evaluate its performance, and estimate the economic benefits of riparian area restoration at the watershed and regional scales.

Baker, JR, Kepner, W.G., Chaloud, D.J., Kinney, W.L., Hamilton, M.E., and Jones, K.B. A national program for monitoring stream condition in the Western United States. Presented at: 32nd Annual Meeting of Desert Fishes Council, Death Valley National Park, CA, November 16-19, 2000.

11/16/2000

Contact: Kimberley A. Johnson

Abstract: The U.S. Environmental Protection Agency recently initiated a four-year survey of streams in the Western United States as a component of the Environmental Monitoring and Assessment Program (EMAP). EMAP is developing indicators to monitor and assess the condition of ecological resources at a regional or state level of scale. This is accomplished by randomly selecting sites and by obtaining a representative sample of biotic assemblages along with physical and chemical measures. These data are then used to estimate the biological integrity of the sites. Since the stream sites are randomly selected, the data collected can be used to make regional and statewide estimates of stream condition. States included in the survey are Arizona, California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. An overview of the survey design, logistics, sample design and a preliminary account of fishes from stream sites sampled in Arizona, Nevada, and Utah will be presented.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Kepner, W.G., Watts, C.J., Edmonds, C.M., Maingi, J. K., and Marsh, S. E. Retrospective landscape analysis, an approach for evaluation land cover change: San Pedro River case study. Presented at: 43rd Annual conference of the Western Social Sciences Association (Association of Borderland Studies), Reno, NV, April 18-22, 2001.

4/18/2000

Contact: William G. Kepner

Abstract: Vegetation change in the American West has been the subject of much concern and controversy throughout the twentieth century. Over the years, a considerable number and variety of 'claims have been made regarding cause related to changes in land cover. The evidence for vegetation change has primarily been provided through the use of comparative photography and anecdotal accounts. Rarely, have changes been documented or quantitatively measured at scales as large as watersheds or entire biogeographic provinces. This research examines the potential to measure vegetation change over large areas and determine trends in ecological condition using advanced space-based technologies. Specifically, a suite of landscape pattern measurements were developed from satellite remote sensing, spatial statistics, and geographic information systems technology for a semi-arid watershed in southeast Arizona and northeast Sonora, Mexico. Results from this study will provide the basis for developing landscape composition and pattern indicators as sensitive measures of large-scale environmental change and thus, will further the understanding of disturbance regimes related to human and natural stress in the Southwest.

BOOK CHAPTR

Grange, A.H., and Sovocool, G.W. Identifying endocrine disruptors by high-resolution mass spectrometry. 2000 ACS Symposium Series 747 2000, 133-145.

1/20/2000

Contact: Andrew H. Grange

Abstract: The EPA is currently interested in human and ecosystem exposure to endocrine disruptors (1)-compounds that interfere with endogenous hormone systems. Possible endocrine disruptors in the environment include certain pesticides, industrial by-products, and pharmaceuticals. Such chemicals could be found in surface water or wells as a result of agricultural run off (2), leaching from contaminated sites (3,4), or in treated wastewater discharged from urban areas (5). Biologically based assays are often used to screen for the presence of endocrine disruptors. While these tests are sensitive, they are non-specific and not inclusive. Cross-reactivity is common but can be an advantage when searching for unidentified endocrine disruptors. Once a positive result is obtained from a biologically based assay, it is important to identify the compound or compounds responsible for the reactivity. Toxicological studies can then be performed for the identified chemicals. Also, when screening for a specific compound, possible cross-reactivity suggests that a more specific confirmatory technique should be applied to some fraction of the samples showing a positive result for a target analyte.

JOURNAL

Aue, D.H., Guidoni, M., and Betowski, L.D. Ab Initio calculated gas-phase basicities of polynuclear aromatic hydrocarbons. International Journal of Mass Spectrometry and Ion Processes 201 (1-3):283-295 (2000). EPA/600/J-00/319.

12/8/2000

Contact: Leon D. Betowski

Abstract:

Brumley, W.C., Grange, A.H., Kelliher, V., Patterson, D.B., Montcalm, A., Glassman, J., and Farley, J.W. Environmental screening of acidic compounds based on CZE/LIF detection with GC/MS and GC/HRMS identification. Journal of AOAC International 83 (5):1059-1067 (2000). EPA/600/J-01/406.

4/18/2000

Contact: William C. Brumley

Abstract:

Jones-Lepp, T., Gerlach, C.L., and Cooter, E.J. The power of analytical methods for measuring suspected endocrine disrupting compounds: a pilot field study. Trends in Analytical Chemistry 19 (5):286-291 (2000). EPA/600/J-00/223.

5/4/2000

Contact: Tammy L. Jones-lepp

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Daughton, C.G., and Ternes, T.A. Pharmaceuticals and personal care products in the environment: Agents of subtle change?. *Environmental Health Perspectives* 107 (6):907-938 (2000). 1/31/2000

Contact: Christian G. Daughton

Abstract:

Brilis, G.M., and Gerlach, C.L. Remote sensing tools assist in environmental forensics part I - traditional tools. *International Journal of Environmental Forensics* 1 (2):63-67 (2000). EPA/600/J-02/205. 8/22/2000

Contact: George michael Brilis

Abstract:

Brilis, G.M., and Worthington, J. Quality science in the courtroom: U.S. EPA data quality and peer review policies and procedures compared to the daubert factors. *International Journal of Environmental Forensics* 1 (4):197-203 (2000). EPA/600/J-01/028. 12/28/2000

Contact: George michael Brilis

Abstract:

de Soyza, A.G., Whitford, W.G., Turner, S.J., Van Zee, J., and Johnson, A.R. Assessing and monitoring the health of western rangeland watersheds. *Environmental Monitoring and Assessment* 64 (1):153-166 (2000). EPA/600/J-01/402. 3/29/2000

Contact: Walter G. Whitford

Abstract:

Noga, E., Smolowitz, and Whoo, L.H. Pathology of shell disease in the blue lab. *Journal of Fish Disease* 23 (6):389-399 (2000). EPA/600/J-01/238. 12/10/2000

Contact: Miriam M. Rodon-naveira

Abstract:

Carpenter, D.E., and Lunetta, R.S. Challenges in forecasting the long-term impacts of multiple stressors on a Mid-Atlantic region. *Environmental Toxicology and Chemistry* (Pensacola, FL: SETAC Press) 4 (2):1076-1081 (2000). EPA/600/J-00/286. 3/20/2000

Contact: Ross S. Lunetta

Abstract:

Ritters, K.H., Wickham, J.D., O'Neill, R.V., Jones, K.B., and Smith, E.R. Global-Scale patterns of forest fragmentation. *Conservation Ecology* (on-line) 4 (2):1-29 (2000). EPA/600/A-00/100, <http://www.consecol.org/Journal/vol4/iss2/art3/>. 10/3/2000

Contact: Kenneth B. Jones

Abstract:

Smith, E.R. An overview of EPA's regional vulnerability assessment (REVA) program. *Environmental Monitoring and Assessment* 64 (1):9-15 (2000). EPA/600/J-00/268. 9/15/2000

Contact: Elizabeth R. Smith

Abstract:

Wickham, J.D., O'Neill, R.V., and Jones, K.B. The geography of ecosystem vulnerability. *Landscape Ecology* 15 (6):495-504 (2000). EPA/600/J-00/224. 8/17/2000

Contact: James D. Wickham

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Wickham, J.D., Riitters, K.H., O'Neill, R.V., Reckhow, N., Wade, T.G., and Jones, K.B. Land cover as a framework for assessing risk of water Pollution. American Water Resources Association, Water Resources Bulletin, and International Association on Water Quality 36 (6):1417-1422 (2000). EPA/600/J-01/059. 12/9/2000

Contact: James D. Wickham

Abstract:

Holland, D.M., De Oliveira, V., Cox, L.H., and Smith, R. Estimation of regional trends in sulfur dioxide over the Eastern United States. Environmetrics 11 (4):373-393 (2000). EPA/600/J-00/222. 8/10/2000

Contact: David M. Holland

Abstract:

Lunetta, R.S., and Balogh, M.E. Application of multi-date landsat 5 TM Imagery for wetland identification. Photogrammetric Engineering and Remote Sensing 65 (11):1303-1310 (2000). EPA/600/J-00/064. 3/9/2000

Contact: Ross S. Lunetta

Abstract: Multi-temporal Landsat 5 Thematic Mapper (TM) imagery was evaluated for the identification and monitoring of potential jurisdictional wetlands located in the states of Maryland and Delaware. A wetland map prepared from single-date TM imagery was compared to a hybrid map developed using two dates of imagery. The basic approach was to identify land-cover vegetation types using spring leaf-on imagery, and identify the location and extent of the seasonally saturated soil conditions and areas exhibiting wetland hydrology using spring leaf-off imagery. The accuracy of the wetland maps produced from both single- and multiple-date TM imagery were assessed using reference data derived from aerial photographic interpretations and field observation data. Subsequent to the merging of wetland forest and shrub categories, the overall accuracy of the wetland map produced from two dates of imagery was 88 percent compared to the 69 percent result from single-date imagery. A Kappa Test Z statistic of 5.8 indicated a significant increase in accuracy was achieved using multiple-date TM images. Wetland maps developed from multi-temporal Landsat TM imagery may potentially provide a valuable tool to supplement existing National Wetland Inventory maps for identifying the location and extent of wetlands in northern temperate regions of the United States.

Canterbury, G.E; Martin, T.E; Petit, D.R; Petit, L.J; Bradford, D.F. Bird communities and habitat as ecological indicators of forest condition in regional monitoring. Conservation Biology 14 (2):544 - 558 (2000). 4/22/2000

Contact: David F. Bradford

Abstract: Ecological indicators for long-term monitoring programs are needed to detect and assess changing environmental conditions. We developed and tested community-level environmental indicators for monitoring forest bird populations and associated habitat. We surveyed 197 sampling plots in loblolly-shortleaf pine forests, spanning an area from Georgia to Virginia (U.S.A.) and representing a gradient in levels of anthropogenic disturbance. Ninety of these plots were randomly selected from a sampling grid, permitting quantitative assessment of cumulative distribution functions for bird community and habitat parameters. Species were independently classified into habitat assemblages indicating birds typical of disturbed habitat (e.g., shrubland, forest edge) and undisturbed habitat (mature forest). Relative abundances of these assemblages were used to form a bird community index-similar to the index of biotic integrity applied to aquatic systems-showing the effects of habitat disturbance on forest bird communities. Bird communities on the majority of the sample area (52-75%, 90% confidence interval) were dominated by disturbance-tolerant species. Sites dominated by mature forest species were comparatively uncommon. Habitat assemblages appeared to be particularly useful tools for environmental monitoring; individual species abundance was positively correlated with assemblage species richness, and assemblage members showed consistent responses to variations in disturbance level. To a lesser extent, component species of nesting guilds showed this pattern of cohesive responses, but those of foraging guilds did not. We also developed a habitat index based on habitat variables that predicted bird community index values. Habitat and bird community indices were strongly correlated in an independent validation dataset, suggesting that the habitat index can provide a reliable predictor of bird community status.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Kutz, F.W., Paul, J.F., and DeMoss, T.B. Update on the ecological condition of the Delmarva coastal bays. Proceedings - Delmarva Coastal Bays Conference III: Tri-State Approaches to Preserving Aquatic Resources 43-49 (2000). EPA/600/J-00/272. 10/2/2000

Contact: Frederick W. Kutz

Abstract:

Jarnagin, S.T., Swan, B.K., and Kerfoot, W. C. Fish as vectors in the dispersal of bythotrephes cederstroemi diapausing eggs survive gut passage. Freshwater Biology 43 (4):579-589 (2000). EPA/600/J-00/130. 1/4/2000

Contact: S. Taylor Jarnagin

Abstract:

Cross, C.L. A new design for a lightweight squeeze box for snake field studies. Herpetological-Review 31 (1):34 (2000). EPA/600/J-00/116. 5/22/2000

Contact: Chad L. Cross

Abstract:

Hall, R.K., Olsen, A.R., Stevens, D., Rosenbaum, B.J., Husby, P., Wolinsky, G.A., and Heggem, D.T. EMAP design and river reach file 3 (RF3) as a sample frame in the Central Valley, California. Environmental Monitoring and Assessment 64 (1):69-80 (2000). EPA/600/J-00/285. 9/25/2000

Contact: Daniel T. Heggem

Abstract:

Ritters, K.H., Wickham, J.D., Vogelmann, J.E., and Jones, K.B. National land-cover pattern data. Ecology 81 (2):604 (2000). EPA/600/J-00/225, <http://www.esapubs.org/archive/ecol/E081/004/default.htm>. 8/17/2000

Contact: Kenneth B. Jones

Abstract:

Jones, K.B., Heggem, D.T., Wade, T.G., Neale, A.C., Ebert, D.W., Nash, M.S., Mehaffey, M.H., Hermann, K.A., Selle, A.R., Augustine, S., Goodman, I.A., Pedersen, J.A., Bolgrien, D., Vigar, J.M., Chiang, D., Lin, C.J., Zhang, Y., Baker, J., and VanRemortel, R. Assessing landscape condition relative to water resources in the Western United States: A strategic approach. Environmental Monitoring and Assessment 64 (1):227-245 (2000). EPA/600/J-02/208. 4/12/2000

Contact: Kenneth B. Jones

Abstract:

Kepner, W.G., Watts, C.J., Edmonds, C.M., Maingi, J.K., Marsh, S.E., and Luna, G. Landscape approach for detecting and evaluating change in a semi-arid environment. Environmental Monitoring and Assessment 64 (1):179-195 (2000). EPA/600/J-01/407. 4/21/2000

Contact: William G. Kepner

Abstract:

Jones, K.B., Neale, A.C., Nash, M.S., Ritters, K.H., Wickham, J.D., O'Neill, R.V., and van Remortel, R.D. Landscape correlates of breeding bird richness across the United States Mid-Atlantic Region. Environmental Monitoring and Assessment 63:159-174. EPA/600/J-02/202. 3/24/2000

Contact: Kenneth B. Jones

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

PUB REPORT

Einfeld, W., and Koglin, E.N. Environmental technology verification report, Groundwater sampling technologies, Burge Environmental Inc. Multiprobe 100. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/074.

9/14/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting purchase, and use of environmental technologies. The Multiprobe 100 consists of two units with tubing and wiring interconnections. A upper receiving module which is deployed at the wellhead on top of the well is 18 inches long. 3.25 inches in diameter, and weighs 3 pounds. The lower sampling module, which is inserted into the water column inside the well, is 12 inches long, 3.25 inches in diameter and also weighs 3 pounds. The system is constructed of Teflon, borosilicate glass, stainless steel and Delrin, a solvent-resistant, acetal homopolymer resin. Electrical solenoid valves are used to select the sampling lever and control gas flow to the sampler. Water level sensors in the water chambers of both modules are used to trigger valve changes during the sampling process. A small, battery-operated microprocessor controller is used to control the valves used during the sampling process.

Einfeld, W., and Koglin, E.N. Environmental technology verification report, Groundwater sampling technologies, Geolog, Inc., Micro-Flo bladder pump model 57400. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/075, <http://www.epa.gov.etv>.

8/25/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency has created the Environmental Technology Verification Program to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting, purchase, and use of environmental technologies. The Micro-Flo bladder pump consists of an internal flexible bladder that is positioned within a rigid stainless steel pump body. The inner bladder is equipped with one-way inlet and outlet valves and passively fills with water when the pump is a depth in the well as a result of the hydrostatic pressure exerted by the surrounding water column. Following the fill cycle, compressed air or nitrogen from a cylinder or compressor at the wellhead is driven down to the pump through tubing to compress the bladder, thus driving the water sample up to the surface through a second tubing line. The pumping sequence consists of repeated fill-compress cycles, using a pneumatic controller positioned at the wellhead. The controller is used to vary the duration and frequency of the fill-compress cycles in order to deliver the desired sample flow rate at the wellhead. The bladder design offers the advantage of minimizing sample turbulence, which can result in loss of VOC in the sample, as well as eliminating contact of the water sample with the compressed air or nitrogen used to lift the sample to the surface.

Schumacher, B.A., Minnich, M.M., Zimmerman, J.H., and Blasdell, J. Integrity of VOA-Vial Seals. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/066 (NTIS PB2001-101547).

9/15/2000

Contact: Brian A. Schumacher

Abstract: Preservation of soil samples for the analysis of volatile organic compounds (VOCs) requires both the inhibition of VOC degradation and the restriction of vapor movement in or out of the sample container. Clear, 40,mL glass VOA vials manufactured by the four major U.S. glass manufacturers were tested for seal integrity. Visual inspection revealed a variety of imperfections ranging from small indentations, bumps, and scratches on vial threads or lips, through obvious defects, such as large indentations or grooves in the vial lips and chipped or broken glass. The aluminum plate vacuum test proved to be unreliable in identifying potentially leaky vials. The septa-seal vacuum test was conducted twice on the 80 selected vials. Mean VOC concentrations after 14 days storage generally were within +/- 20% of the known concentration with a majority of the concentrations within +/- 15% of their known values. There were no statistically significant differences in VOC concentrations between vials in the potentially leaky and control group for any of the manufacturers. Only 1 vial lost VOCs and that was due to a large chip in the vial's lip and neck. These findings indicate that the silicone septa are flexible enough to overcome most vial imperfections and form a complete seal against VOC loss. A careful inspection of the VOA vials prior to use to remove any vials with large and obvious imperfections should be sufficient to screen out vials that are subject to VOC losses.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Einfeld, W., and Koglin, E.N. Environmental technology verification report, Groundwater sampling technologies, Clean environment equipment, SamplEase bladder pump. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/078.

11/25/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information.

The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting purchase, and use of environmental technologies. The SamplEase is a bladder pump consisting of an internal flexible Teflon bladder that is positioned within a rigid stainless steel pump body. The ends of the pump are also constructed of Teflon. The inner bladder is equipped with one-way inlet and outlet valves and passively fills with water when the pump is at depth in the well as a result of the hydrostatic pressure exerted by the surrounding water column. Following the fill cycle, compressed air or nitrogen from a cylinder or compressor at the wellhead is driven down to the pump through tubing to compress the bladder, thus driving the sample up to the surface through a second tubing line. The pumping sequence consists of repeated fill-compress cycles, using a pneumatic controller positioned at the wellhead. The controller is used to vary the duration and frequency of the fill-compress cycles in order to deliver the desired sample flow rate at the wellhead. The bladder design offers the advantage of minimizing sample turbulence, which can result in loss of VOCs in the sample, as well as eliminating contact of the water sample with the compressed air or nitrogen used to lift the sample to the surface.

Dindal, A.B., Bayne, C.K., and Jenkins, R.A. Environmental technology verification report - EnviroGard PCB Test Kit - Strategic Diagnostics Inc. Las Vegas, NV: U.S. EPA 1998. EPA/600/R-98/113 (NTIS PB2001-100491).

8/24/2000

Contact: Eric N. Koglin

Abstract: In July 1997, the U.S. Environmental Protection Agency (EPA) conducted a demonstration of Polychlorinated biphenyl (PCB) field analytical techniques. The purpose of this demonstration was to evaluate field analytical technologies capable of detecting and quantifying PCBs in soils and solvent extracts. The fundamental objectives of this demonstration were (1) to obtain technology performance information using environmental and quality control samples. (2) to determine how comparable the developer field analytical results were with conventional reference laboratory results, and (3) to report on the logistical operation of the technology. The demonstration design was subjected to extensive review and comment by EPA's National Exposure Research Laboratory (NERL) Environmental Sciences Division in Las Vegas, Nevada; Oak Ridge National Laboratory (ORNL); EPA Regional Offices; the U.S. Department of Energy (DOE); and the technology developers. The demonstration found that the EnviroGard Kit was simple to operate in the field, requiring about an hour for initial set-up and preparation for sample analysis. Once the kit was operational, the sample throughput of the EnviroGard kit was 18 samples/hour under outdoor conditions and 9 to 10 samples/ hour under chamber conditions. Three operators analyzed samples during the demonstration, but the technology can be run by a single, trained operator. Minimal training (2 to 4 h) is required to operate the EnviroGard kit, provided the user has a fundamental understanding of basic chemical and field analytical techniques. The overall performance of the EnviroGard PCB test kit was characterized as biased and imprecise about 50% of the time; however, the kit generated no false positive or false negative results for soil samples. It should be noted that there was an increased likelihood that results would be biased high as a result of the conservatism that the manufacturer has incorporated into the calculation of results.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Bujewski, G., and Rutherford, B. Site characterization and analysis penetrometer system(SCAPS) lazer-induced fluorescence (LIF) sensor and support system, EPA/600/R-97/019. U.S. Environmental Protection Agency.

2/5/2000

Contact: Stephen Billets

Abstract: The Consortium for Site Characterization Technology (CSCT) has established a formal program to accelerate acceptance and application of innovative monitoring and site characterization technologies that improve the way the nation manages its environmental problems. In 1995 the CSCT conducted a demonstration of two in situ laser-induced fluorescence-based technologies using the Site Characterization and Analysis Penetrometer System (SCAPS) cone penetrometer testing (CPT) platform. The purpose of this Innovative Technology Verification Report (ITVR) is to document the demonstration activities, present and evaluate the demonstration data in order to verify the performance of the SCAPS LIF sensing technology relative to developer claims. The SCAPS LIF system uses a pulsed laser coupled with an optical detector to measure fluorescence via optical fibers. The LIF method provides data on the in situ distribution of petroleum hydrocarbons based on the fluorescence response induced in the polycyclic aromatic hydrocarbon (PAH) compounds that are components of petroleum hydrocarbons. The primary objectives of the field demonstrations were to evaluate the SCAPS LIF technology. In the approved demonstration plan, the developers presented several performance claims against which they were evaluated. The demonstration was designed to evaluate the LIF technology as a field screening method by comparing LIF data to data produced by conventional sampling and analytical methods. The main savings attributable to the SCAPS LIF system is that it can substantially reduce the number of monitoring wells drilled at a site. In a general site characterization effort, it can provide data in less time as far less expensively than a conventional drilling and sampling. Investigation-derived wastes are minimal, and worker exposure to contaminants is reduced when using in situ technologies rather than conventional drilling and sampling methods.

Einfeld, W., and Koglin, E.N. Environmental technology verification report - Groundwater sampling technologies - QED Environmental Systems Inc. Well Wizard Dedicated Sampling System. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/062, <http://www.epa.gov/etv>.

8/29/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting purchase, and use of environmental technologies. The Well Wizard is a bladder pump consisting of an internal flexible bladder that is positioned with a rigid stainless steel pump body. The inner bladder is equipped with one-way inlet and outlet valves and passively fills with water when the pump is a depth in the well as a result of the hydrostatic pressure exerted by the surrounding water column. Following the fill cycle, compressed air or nitrogen from a cylinder or compressor at the wellhead is driven down to the sample up to the surface through a second tubing, using a pneumatic controller positioned at the of the fill-compress cycles in order to deliver the the advantage of minimizing sample turbulence, as eliminating contact of the water sample with the surface.

Einfeld, W., and Koglin, E.N. Environmental Technology Verification Report, Groundwater Sampling Technologies, Sibak Industries Ltd. Inc., Kabis Sampler Models I and II. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/054, <http://www.epa.gov/etv>.

6/22/2000

Contact: Eric N. Koglin

Abstract:

Dindal, A.B., Bayne, C.K., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, Explosives detection technology, Research international Inc., FAST 2000. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/045, <http://www.epa.gov/etv>.

6/18/2000

Contact: Eric N. Koglin

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Dindal, A.B., Bayne, C.K., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, Explosives detection technology, Barringer instruments, GC-IONSCAN. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/046, <http://www.epa.gov/etv>. 7/19/2000

Contact: Eric N. Koglin

Abstract:

Sullivan, T., Armstrong, A.Q., Dindal, A.B., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, Environmental decision support software, C Tech Development Corporation, Environmental visualization system pro (evs-pro). Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/047, <http://www.epa.gov/etv>. 10/9/2000

Contact: Eric N. Koglin

Abstract:

Sullivan, T., Armstrong, A.Q., Dindal, A.B., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, environmental decision support software, University of Tennessee Research Corporation, spatial analysis and decision assistance (SADA). Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/036, 7/22/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting, purchase, and use of environmental technologies. The Site Characterization and Monitoring Technologies Pilot (SCMT), one of 12 technology areas under ETV, is administered by EPA's National Exposure Research Laboratory (NERL). With the support of the U.S. Department of Energy's (DOE's) Environmental Management (EM) program, NERL selected a team from Brookhaven National Laboratory (BNL) and Oak Ridge National Laboratory (ORNL) to perform the verification of environmental decision support software. This verification statement provides a summary of the test results of a demonstration of the University of Tennessee Research Corporation's (UTRC's) Spatial Analysis and Decision Assistance (SADA) environmental decision support software product.

Sullivan, T., Armstrong, A.Q., Dindal, A.B., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, environmental decision support software, decision FX, Inc., groundwater FX. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/037, <http://www.epa.gov/etv/verifprt.htm>. 7/24/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting, purchase, and use of environmental technologies. The Site Characterization and Monitoring Technologies Pilot (SCMT), one of 12 technology areas under ETV, is administered by EPA's National Exposure Research Laboratory (NERL). With the support of the U.S. Department of Energy's (DOE's) Environmental Management (EM) program, NERL selected a team from Brookhaven National Laboratory (BNL) and Oak Ridge National Laboratory (ORNL) to perform the verification of environmental decision support software. This verification statement provides a summary of the test results of a demonstration of the University of Tennessee Research Corporation's (UTRC's) Spatial Analysis and Decision Assistance (SADA) environmental decision support software product.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Sullivan, T., Armstrong, A.Q., Dindal, A.B., Jenkins, R.A., and Koglin, E.N. Environmental technology verification report, environmental decision support software, decision FX, Inc. sampling FX. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/038, <http://www.epa.gov/etv/verifrpt.htm>.

7/18/2000

Contact: Eric N. Koglin

Abstract: The U.S. Environmental Protection Agency (EPA) has created the Environmental Technology Verification Program (ETV) to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. The goal of the ETV Program is to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies. ETV seeks to achieve this goal by providing high-quality, peer-reviewed data on technology performance to those involved in the design, distribution, financing, permitting, purchase, and use of environmental technologies. The Site Characterization and Monitoring Technologies Pilot (SCMT), one of 12 technology areas under ETV, is administered by EPA's National Exposure Research Laboratory (NERL). With the support of the U.S. Department of Energy's (DOE's) Environmental Management (EM) program, NERL selected a team from Brookhaven National Laboratory (BNL) and Oak Ridge National Laboratory (ORNL) to perform the verification of environmental decision support software. This verification statement provides a summary of the test results of a demonstration of the University of Tennessee Research Corporation's (UTRC's) Spatial Analysis and Decision Assistance (SADA) environmental decision support software product.

Brilis, G.M. Strategic plan for geographic information system (GIS) quality assurance in the EPA. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/009 (NTIS PB2000-106696) , Available: Sent to NTIS 7/6/2000.

3/7/2000

Contact: George michael Brilis

Abstract: The EPA GIS-QA Team was created to fill the gap between the EPA Quality Assurance (QA) and Geographic Information Systems (GIS) communities. All EPA Offices and Regions were invited to participate. Currently, the EPA GIS-QA Team consists of members from the EPA Regional Offices; the Office of Enforcement and Compliance Assurance OECA; the Office of Prevention, Pesticides and Toxic Substances (OPPTS); the Office of Water (OW); the new Office of Environmental Information (OEI); and the Office of Research and Development (ORD). The GIS-QA Team was established by the Environmental Sciences Division of ORD's National Exposure Research Laboratory. The EPA GIS-QA Strategic Plan is a product of the EPA GIS-QA Team. It builds upon the framework presented at various conferences during FY99 and was the first attempt to chart a course for the development of the Agency's GIS-QA activities. This Strategic Plan defines the mission of GIS-QA Team throughout EPA, and articulates the strategic vision of the EPA GIS-QA Team. It identifies the short- and long term goals, objectives, and activities necessary to accomplish the mission defined by the strategic vision. As the GIS-QA Team develops, this Strategic Plan will change to adapt to new technology and changing requirements.

Jan 1, 2000 - Dec 31, 2000

Presented Published

Brilis, G.M., and Chem, B. Interim EPA guidance for geospatial-related quality assurance project plans. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-01/062 (NTIS PB2002-104613).

12/16/2000

Contact: George michael Brilis

Abstract: This guidance supplements EPA Guidance for Quality Assurance Project Plans (EPA QA/G-5), in that the focus here is on collection and use of geospatial rather than other environmental data (e.g., strictly chemical or biological data), including unique aspects of data storage, retrieval and processing. This guidance addresses the aspects of the Geospatial Information Lifecycle (Figure 1). The EPA recognizes that the use of quality management components and tools in the Organization/Program and the Project levels is based on a graded approach where components and tools are applied according to the scope of the program and/or the intended use of the outputs from a process. This approach recognizes that a "one size fits all" approach to quality requirements is not appropriate for an organization as diverse as EPA. For example, the quality expectations of a fundamental research program are different from that of a regulatory compliance program because the purpose or intended use of the data differs. Applying a graded approach means that quality systems tools and components for different organizations and programs will vary according to the specific objectives and needs of the organization. OVERVIEW OF QA PROJECT PLAN REQUIREMENTS FOR GEOSPATIAL DATA The U.S. Environmental Protection Agency (EPA) has developed the Quality Assurance Project Plan as an important tool for project managers and planners to document the type and quality of data needed for environmental decisions and to provide a blueprint for collecting and assessing those data. The QA project plan is the critical planning document for any environmental data collection or use because it documents how quality assurance (QA) and quality control (QC) activities will be implemented during the life cycle of a project, or task. EPA policy requires that all projects involving the generation, acquisition, and use of environmental data be planned and documented and have an Agency-approved QA project plan prior to the start of data collection. The QA project plan should be detailed enough to provide a clear description of every aspect of the project and include information for every member of the project staff, including data collectors, software users, and data reviewers. Effective implementation of the plan assists project managers in keeping projects on schedule and within the resource budget.

Vogelmann, J.E., and Wickham, J.D. Implementation strategy for production of national land-cover data (NLCD) from the landsat 7 thematic mapper satellite. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/051 (NTIS PB2001-101756).

7/13/2000

Contact: James D. Wickham

Abstract: As environmental programs within and outside the federal government continue to move away from point-based studies to larger and larger spatial (not cartographic) scale, the need for land-cover and other geographic data have become ineluctable. The national land-cover mapping project of MRLC marks the first consistently classified conterminous land-cover data set, effectively replacing USGS' Land Use Data Analysis (LUDA) system derived from high altitude aerial photography acquired in the early 1970's. Because of the continually changing nature of the earth's surface due to anthropogenic activities and other factors, a single point-in-time land-cover product is insufficient for many applications. Production of a second point-in-time land-cover product is proposed as a database. The proposed database design includes: 1) a second, independently classified land-cover data set derived from Landsat 7 Thematic Mapper data, 2) the land-cover product being produced under the current effort, 3) selected spectral-based change estimates (e.g., temporal NDVI), 4) thirty-meter DEMS, and 5) selected landscape metrics. Development of the database for the conterminous United States will start after evaluation of the prototype

Jan 1, 2000 - Dec 31, 2000

Presented Published

Pitchford, A.M., Denver, JM, Olsen, A.R., Ator, S. W., Cormier, S.M., Nash, M.S., and Mehaffey, M.H. Testing landscape indicators for stream condition related to pesticides and nutrients: Landscape indicators for pesticides study for Mid-Atlantic Coastal Streams (LIPS-MACS). Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/087. 11/3/2000

Contact: Ann M. Pitchford

Abstract: This research plan for the Landscape Indicators for Pesticides Study ? Mid-Atlantic Coastal Streams (LIPS-MACS) describes the rational and approach of developing a research project to evaluate statistical landscape indicator models for freshwater streams in the Mid-Atlantic Coastal Plain. This study is the first in a series of studies which will develop landscape indicator models for pesticides and toxic chemicals in selected areas, nationwide. These models, often termed "landscape indicators," will be developed for pesticides and nutrients in stream water and persistent organic pollutants, mercury, and arsenic in sediments. In the statistical analysis, certain landscape characteristics, termed metrics, will be compared with dependent variables. The chemical analyses will include pesticides, nutrients, and major ions in stream water and historically used chlorinated pesticides, poly chlorinated biphenyls (PCBs) and mercury and arsenic in stream sediments. This study is intended to be consistent with several U.S. Environmental Protection Agency (EPA) approaches and guidelines including the Landscapes Approach (Jones et al., 2000); EPA's Guidelines for Ecological Risk Assessment (U.S. EPA 1998), EPA's Evaluation Guidelines for Ecological Indicators (Jackson et al., 1999), and the pesticide regulatory perspective.

Jones, K.B., Williams, L.R., Pitchford, A.M., Slonecker, E.T., Wickham, J.D., O'Neill, R.V., Garofalo, D., and Kepner, W.G. A National assessment of landscape change and impacts to aquatic resources: A 10-year strategic plan for the landscape sciences program. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/001 (NTIS PB2001-100153). 2/20/2000

Contact: Kenneth B. Jones

Abstract:

Goodrich, D., Kepner, W.G., Hernandez, M., Miller, S., Goff, B., Jones, K.B., Edmonds, C.M., Wade, T.G., Ebert, D.W., and Heggem, D.T. Landscape indicator interface with hydrologic models research plan. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/042. 5/1/2000

Contact: Kimberley A. Johnson

Abstract:

Jarnagin, S.T., and Slonecker, E.T. A research plan for the use of thermal AVHRR imagery to study annual and seasonal mean surface temperatures for large lakes in North America. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/012 (NTIS PB2001-101933). 3/25/2000

Contact: S. taylor Jarnagin

Abstract:

Kepner, W.G., and Heggem, D.T. San Pedro Geodata Browser. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/C-00/002. 3/26/2000

Contact: William G. Kepner

Abstract:

Garofalo, D., Lacerte, M. J., and Slonecker, E.T. Environmental Photographic Interpretation Center: Remote sensing fundamentals and applications. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/C-00/001. 7/8/2000

Contact: Donald Garofalo

Abstract:

Jan 1, 2000 - Dec 31, 2000

Presented Published

Hall, R.K., Tuttle, P., Husby, P., Heggem, D.T., and Hillenbrand, J. Research Plan: Northeastern Nevada landscape and aquatic resource characterization on federal lands. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/011.

1/30/2000

Contact: Daniel T. Heggem

Abstract:

Loveland, T.R., Sohl, T., Sayler, K., Gallant, A., Dwyer, J., Vogelmann, J., Zylstra, G., Wade, T., Edmonds, C., Chaloud, D.J., and Jones, K.B. Land cover trends: rates, causes, and consequences of late twentieth century U.S Land Cover Change. Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-99/105 (NTIS PB2001-100348).

8/23/2000

Contact: Timothy G. Wade

Abstract: Information on the rates, driving forces, and consequences of land use and land cover change is important in studies addressing issues ranging from the health of aquatic resources to climate change. This four-year research project between the U.S. Geological Survey and the U.S. Environmental Protection Agency has a goal to document the types, geographic distributions, and rates of land cover change on a region-by region basis over the past 30 years for the conterminous U.S., and to determine some of the key drivers and consequences of the changes. The objectives of the study are to: 1) Develop a comprehensive methodology for using sampling and change analysis techniques and Landsat MSS and TM data for measuring regional land cover change across the U.S. 2) Characterize the types, rates, and temporal variability of change for a 30-year period. 3) Document regional driving forces and consequences of change. 4) Prepare a national synthesis of land cover change. The estimates of conterminous U.S. rates, driving forces, and consequences of land cover change will be developed for 84 ecoregions defined by Omernik of the U.S. Environmental Protection Agency. These will permit the analysis of the spatial dimension of land cover change, and will also contribute to the assessment of consequences of land cover change. Our goal is to identify greater than or equal to 1% change in general land cover within each ecoregion, at an 85% confidence level. Initially, we will test our ability to achieve this goal in five pilot regions: (1) Montana Valley and Foothill Prairies, (2) North Central Appalachians, (3) Northern Piedmont, (4) Southeastern Plains, and (5) Madrean Archipelago. Based on the results of the pilot test, we will refine and apply an appropriate methodology to the remaining conterminous U.S. ecoregions.

Skirvin, S.M., Drake, S.E., Maingi, J. K., Marsh, S. E., and Kepner, W.G. An accuracy assessment of 1997 landsat thematic mapper derived land cover for the upper San Pedro Watershed (U.S./Mexico). Las Vegas, NV: U.S. Environmental Protection Agency 2000. EPA/600/R-00/097 (NTIS PB2001-104914).

12/21/2000

Contact: William G. Kepner

Abstract: High-Resolution airborne color video data were used to evaluate the accuracy of a land cover map of the upper San Pedro River watershed, derived from June 1997 Landsat Thematic Mapper data. The land cover map was interpreted and generated by Instituto del Medio Ambiente y el Desarrollo Sustentable del Estado de Sonora (IMADES), Hermosillo, Sonora and supplies to the Arizona Remote Sensing Center at the University of Arizona for evaluation. Map pixel size had been increased from 30 to 60 meters to match the 1973, 1986, and 1992 North American Landscape Characterization (NALC) land cover maps produced from Landsat MSS data. The airborne color video data included six flight lines acquired 2-5 May 1997 over the San Pedro watershed in the U.S. GPS time and coordinate information encoded on the video tapes were used to generate GIS point coverages of video frames covering the upper San Pedro. A total of 527 video sample points were drawn randomly from a subset of 4567 frames falling on areas of uniform cover classes at least 180 meters square. Sample points were stratified by cover class area, with a minimum sample of 24 points of classes of small areal extent. The Water class was extremely rare (covering less than 0.1% of the study area) and was excluded from video data analysis for lack of data. Video sample points were reviewed by an experienced interpreter who assigned land cover class labels based on available descriptions. Map and video labels were compared to generate a classification error matrix, which produced an overall map accuracy of about 72%.

Jan 1, 2000 - Dec 31, 2000

Presented Published

SYMPOS/CONF

Holland, D.M., and Fuentes, M. Spatial prediction of fine particulate matter. Presented at: 2000 Proceedings of the Section on Statistics and the Environment. Annual Meeting of the American Statistical Association, Indianapolis, IN, August 13-17, 2000. 2000. EPA/600/A-02/040.

8/14/2000

Contact: David M. Holland

Abstract: A new national monitoring network for the measurement of fine particulate matter (PM_{2.5}) is currently under development. A primary goal of this network is to collect monitoring data in residential communities for the evaluation of compliance with particulate air quality standards. In this analysis, we apply an empirical Bayesian approach to predict PM_{2.5} at selected points within multi-state regions covering the eastern U.S.

Wickham, J.D., and Wade, T.G. Spatial pattern of water pollution risk in Maryland, USA. Presented at: 2nd International Conference on Geospatial Data in Forestry and Agriculture, Lake Buena Vista, FL, January 31, 2000. EPA/600/J-00/133.

1/31/2000

Contact: James D. Wickham

Abstract: Numerous field studies show that nitrogen (and phosphorous) export coefficients are significantly different across forest, agriculture, and urban land-cover types. We treated these export coefficients as a distribution, and used simulations to estimate the risk of increased nitrogen loads for Maryland watersheds as a function of land-cover composition. Highest risks were found in the north-central portion of the state, and the highest variability of risk estimates occurred along the Baltimore-Washington corridor. The methods apply to environmental management for assessing the risk to increased nonpoint nutrient pollution. Interpretation of the risk measures are discussed relative to their application for a single watershed and across a region comprised of several watersheds.